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TECHNICAL PUBLICATION ON APPROACHES TO THE FORMULATION OF COMPREHENSIVE CONSTRUCTION PLANNING AND IMPLEMENTATION POLICIES IN AFRICA

APPROACHES TO THE FORMULATION OF COMPREHENSIVE CONSTRUCTION PLANNING AND IMPLEMENTATION POLICIES IN AFRICA.

INTRODUCTION.

The construction industry is one of the key sectors of the national economy in both developing and developed countries. It derives its importance from its contribution to the gross domestic product and total capital formation, estimated at 4 to 10 percent, and 40 to 60 percent, respectively in the countries of the African region.

The construction sector produces the buildings, roads, dams, irrigation systems and other infrastructures on which the national development process depends. It provides employment to about 5 percent of the labour force.

The construction sector in Africa is however, characterised by a number of problems which affect the realization of its full potential to contribute more effectively to the development of the national economy. These problems can be traced primarily to a lack of explicit recognition of its important role and the need to integrate it fully into national economic plans. The demand for construction should be comprehensively assessed and planned for so that realism can be achieved in the formulation and implementation of projects.

After outlining the characteristics of the construction sector and discussing the need for undertaking a comprehensive and coordinated planning of the sector, the paper examines the major elements of construction planning and implementation and identifies areas in which African governments have to take action to achieve improvements.

THE CONSTRUCTION SECTOR IN AFRICA

Characteristics of the Construction Sector.

The construction sector in Africa is generally characterized by the following major features:

(a) High dependence on imported building materials, construction technology and skills.

(b) Frequent shortages of essential building materials which are usually expensive, more so in locations far removed from production and distribution centres.

(c) Overcentralization of building materials production units in a few locations. Many plants are characterized by use of inappropriate technologies, underutilization of installed capacities, repair and managerial skills.

(d) Major projects are undertaken by foreign construction firms and a few large local firms. The majority of registered contractors are in the small and medium-sized categories with limitations of equipment, skills and sound financial support.

(e) Low productivity resulting, among other factors, from inadequatly trained craftsmen, poor supervision and management practices, use of obsolete plant and equipment and poor maintenance practices.

(f) Existence of outmoded building codes and regulations which do not encourage the introduction of innovative building materials and construction techniques.

(g) Delays in project completion caused, among other factors, by frequent shortages of building materials, inadequate and inconsistent funding, and over programming without reference to the available resource base.

(h) Responsibility for the sector is dispersed among a number of ministries, parastatals and departments which often operate without much coordination of activities. This does not promote the identification of overall needs and a planned development of the sector towards the achievement of the goals of national development plans.

(i) There is a very active informal construction sector which operates particularly in housing construction, and provides services to the formal construction sector.

Need for Comprehensive Approach to Construction Planning and Implementation.

The characteristics of the construction sector outlined above, viewed in the light of the important contribution that the sector makes to the development of the national economy, point to the need for deliberate action aimed at its proper organization and growth.

If the sector is expected to achieve an increasing measure of self-sufficiency and be able to provide the buildings and infrastructural network so essential for the activities of other economic sectors in the national economy, then its development has to be planned in a rational and coordinated manner.

The characteristics of the sector reveal a complex array of inter-relationships and factors which need to be properly understood so that measures that would support its growth can be formulated. Demand for construction should be assessed and matched against construction capabilities, materials and financial resources to determine the ability of the local construction sector to meet this demand. Various elements of national plans should be integrated in order to establish this demand.

A system should be set up for assessing the overall needs of the sector and determining measures that would remove bottlenecks to the sector's development.

In brief, an organized system for comprehensive planning of construction is indispensable. The establishment of such a system should also lead to the effective integration of construction sector plans in national economic plans.

Problems of implementation that result in delays, poor quality output, and low levels of achievement of construction programme targets should be properly assessed and planned for. A system for effective supervision and monitoring of project implementation should be established.

CONSTRUCTION PLANNING

Demand for Construction.

There are three major components of the demand for construction: residential buildings, non-residential buildings, and civil engineering and infrastructural works. The percentage share of these components in the total construction output varies according to the stage of development. For example, building projects in Tanzania constituted 32.6 percent of all construction in 1972. By 1975, this proportion had increased to 45 percent and is currently estimated at well over 50 percent. Each of these three categories of construction has different levels of requirements with respect to materials usage, skills and

expertise and equipment even though similarities in characteristics may be observed. For each of the categories there is a contribution by the public sector and also the private sector. While activities in the public sector can easily be identified and aggregated, private sector demand cannot be determined with the same level of accuracy. It is important however, that an attempt is made to assess the contribution of the various sectors to construction demand so that measures for the provision of construction inputs do not fall short of expectations.

Residential Buildings.

Experience in African countries shows that public sector housing development agencies construct about 40 percent of new addition to the national housing stock every year. The remaining 60 percent is built by private estate development agencies and individuals. National housing corporations usually prepare housing investments programmes which are embodied in national development plans. Another component of public sector housing construction is that contributed by different government ministries, departments and institutions for which annual budgetary allocations are made. There has to be a machinery for centralizing information on these latter constructions so as to facilitate planning for resource inputs, especially building materials.

Information on private sector housing development is more difficult to assemble. In planned areas where developers are required to obtain building permits, and this legislation is enforced, statistics can be obtained which would help to forecast future developments. To this must be added the houses built in peri-urban and rural areas for which no formal building permits are obtained. Information on this category of housing is more difficult to obtain.

Non-residential Buildings.

The main client for this category of buildings is the government represented by the ministries, departments and parastatals. In some countries, for example, Ghana, Governments has set up a parastatal which acts as consultant to government for architectural and civil engineering services in the area of project design, tendering and supervision. Projects valued above specified levels are required to be referred to this parastatal. However, in many cases, such a consulting organization would get involved in projects only after budgetary allocations have been approved.

An area of concern is therefore for a coordinated approach in project selection at the planning stage so that the projects that are included in national development plans can have greater opportunities for implementation.

In the absence of accurate information about the future programmes of the private sector for non-residential building construction, estimates based on past experience can be used for the preparation of the construction plan.

Civil Engineering Works.

The construction of roads, bridges, dams, irrigation schemes, etc. are essentially major projects for which detailed planning and design is undertaken by specialized institutions in the public sector on behalf of government. Since many of such projects require large capital outlays which cannot be mobilized locally, external sources of funding have been sought by African governments for their planning and implementation. Such funding arrangements which very often require international competitive bidding result in the involvement of foreign construction companies and provisions for the direct importation of inputs which are not locally available. Civil engineering projects usually consume large quantities of building materials like cement and steel which should be forseen and planned for.

Some civil engineering works are also undertaken by the private sector but the magnitude of such projects is small compared with those undertaken by central government. Any information which can be assembled on these projects would however, enhance the quality of the overall construction plan for the country.

Local Construction Capacity.

A major prequisite for the successful implementation of construction programmes is the availability of an adequate number of construction firms with the requisite capital base, equipment, skills and experience in relation to the scope of projects envisaged. It is therefore, important at the planning stage to undertake an assessment of the capacity of local construction firms and determine to what extent additional capacities from external sources would be required, and the related financial implications.

Indigenous Contractor Capacity.

More than 50 percent of locally registered contractors fall into the category of small size firms with limited technical and managerial competence, and little financial support which qualify them only to undertake minor construction jobs. Local contractors with capability to undertake major constructions are rather few and the gap is therefore, filled by foreign base firms with local offices. While the general situation is known, it is important to maintain an accurate register of firms which is reviewed periodically so that up to date assessments of available capacities can be made.

Measures have been taken in some countries to undertake a prequalification of contractors based on verifiable equipment holdings, technical and managerial staff, financial position and previous experience. A classification scheme based on an objective assessment of a firm's resources should help to reduce the incidence of awarding contracts to contractors who abandon jobs mid-way because they do not have the required technical and managerial competence.

An assessment of local construction capacity should lead to an identification of areas in which measures should be formulated to assist the firms to improve their performance and widen the scope of their operations so as to reduce dependence on foreign construction companies.

Participation of Foreign Construction Firms.

Major jobs like dams, large irrigation schemes, airports and roads are in the main executed by foreign firms. By virtue of their international experience, and panoply of technical and financial resources exclusively available to the large multinationals of the industrialized countries, they become obvious choices for such projects. While there is no solution to this situation in the short or medium term, measures should be instituted for foreign firms to team up with local firms as a means of building up the expertise of the latter. Some countries including Nigeria and Egypt have already enforced action in this area.

The financial implications of the participation of foreign construction firms on the national construction plan should be evaluated so that the necessary budgetary allocations can be sought. The high foreign currency cost implications should serve as an incentive for the promotion of measures to develop indigenous capabilities.

Supply of Building Materials.

The construction industry in several African countries is characterized by periodic shortages of essential building materials which in turn lead to delays in project implementation and high cost over-runs. The shortages may not always be nationwide. Sometimes because of deficiencies in the transportation network certain provinces are difficult to reach from the centralised materials production centres or centres of distribution of imported items.

The supply situation of building materials in the various parts of a country is therefore a crucial factor to consider in the planning of construction projects. This requires a knowledge of the historical trends in terms of local production and imports, and an assessment of supply levels during the plan period. At this point it should be clear that there should be definite linkage between construction planning and planning for the development of building materials. There is a strong mutual relationship. The building materials development plan derives its demand levels from the proposed construction programmes which in turn depend on a guaranteed output from the former to achieve set targets. Fluctuation of the construction market is a major constraint to sound planning for the supply of materials.

The composition of construction output is a major determinant of the demand for different building materials. For example, a study into the patterns of materials inputs into construction projects in Kenya showed that 16 percent of the total expenditure on residential buildings was on cement and concrete products (See table 1) while wood products, plumbing and electrical installations, and roofing materials accounted for 8.9, 13.0, and 4.1 percent, respectively.

TABLE 1.

Materials inputs as a percentage of total expenditure for three types of construction projects in Kenya.

Type of Input	Residential Buildings	Non-residential Buildings	Civil Engineering.
Sand	4.60	6.4	2.98
Aggregate	5.60	5.2	9.94
Cement	10.00	13.4	2.98
Hydrated lime	-	-	2.39
Concrete products	6.00	3.8	2.78
Hardcore filling	1.50	0.9	-
Wood products	8.90	3.0	0.4
Steel products	3.0	17.9	22.83
Paints	8.2	2.2	-
Glass	1.0	1.3	-
Floortiles	5.2	1.65	-
Roofing materials	4.1	2.3	-
Plumbing and sanitary	7.8	5.00	-
Electric installations	5.2	2.05	-
Fuels, litumen, etc.	-	-	2.4
Explosives	-	-	2.98
Hardware and windows	4.5	2.9	2.98
Total	75.6	68.00	52.71

Source: U.N. Center for Human Settlements, Nairobi, Kenya: Role and contribution of the construction industry to socio-economic growth of the developing countries, Cambridge, Massachusetts: CHT Inc., November, 1980 (revised April 1982) IV-44.

The percentage distribution of costs among the different materials inputs is different for non-residential buildings and civil engineering works.

In the context of material development planning, therefore, investments in building materials production including actions aimed at improving the operational performance of existing production units should be aimed at satisfying the requirements of future construction programmes, and also external markets, where there is demand for specific materials. In cases where certain essential materials have to be imported to supplement local production or because such materials cannot be produced locally, adequate budgetary allocation would have to be made to ensure their availability when required.

In view of the critical economic position of the African region and with the region's external debt estimated at around $200 billion, governments have become increasingly conscious of the urgency to examine the potential of developing building materials from indigenous resources. In this context, decentralization of production assumes great importance because of the following advantages:

(a) Contributing generally to improving the supply of materials to the construction market at different demand points and minimizing the rate of price escalations;

(b) Diversification in the range of construction materials through exploitation of all usable raw material deposits

(c) Use of raw material deposits of different sizes to meet the demand of different market sizes and climatic conditions

(d) Reduce problems associated with long distance transportation of a limited range of building materials produced in a few centralized locations.

A network of building materials plants of varying sizes producing a variety of materials that are possible in the light of local resources, would indeed help to reduce the pressure on the demand for the limited foreign exchange and help to focus attention on the key materials which cannot be produced locally. The construction plan would then have a higher chance of success in its implementation.

Rationalization of Design.

The design concepts adopted in the construction industry affect the cost of construction output as well as the construction process and the materials, skills and equipment used. Foreign design concepts are still widely used in African countries in several cases. No conscious attempts have been made to

review designs and make them relevant to the prevailing social, technical and economic realities. The perpetuation of this practice is increasingly strengthened by the participation of foreign consulting and construction companies in the industry. At the same time local professionals have continued to function under the influence of concepts which constituted the major content of their formal education and training.

In the light of present day economic realities buttressed by large foreign indebtedness, the need to reduce construction costs through the adoption of more appropriate design and construction practices is urgent. For example, global estimates indicate that only 20 percent of the world consumption of cement requires the high strength of ordinary portland cement. Rationalization in design should therefore seek to limit the use of cement to structures where its high strength is required, and encourage the increased use of alternative materials like burnt bricks, intermediate binders based on lime and wood products.

Construction design should also reflect the manpower situation in the countries and be geared to the utilization of a large labour force with limited skills, without sacrificing the quality of output. The frequent breakdown in equipment for which spare parts cannot easily be found also strengthens the case for looking for an optimum technological mix for the construction industry. This would not only help to reduce the cost of individual projects, but also help to extend the use of available financial resources to a greater number of social and infrastructural projects.

The Informal Sector.

The contribution of the informal sector to construction output, particularly housing, is so significant that its role and needs cannot be overlooked in construction planning. It has been estimated that housing accounts for one third of the construction sector's contribution to the Gross Domestic Product in developing countries and that over 50 percent of this proportion derived from the informal sector. In addition to its contribution to housing construction, the informal sector also undertakes the construction of non-residential building such as shops, market stalls, clinics and schools, and in the rural areas supplies farmers with barns, silos and other structures. The sector also engages in the production and supply of building materials and components such as concrete blocks, burnt bricks, door and window frames, etc. Some of these items serve as inputs into formal sector construction.

Through these various activities, the informal sector offers a lot of job opportunities. Some skills acquired through on-the-job training are transferred to the formal sector.

Those enganged in the informal sector have been found to be quick to adapt to new technology, and to be able to provide alternatives to equipment and tools that may not be easily accessible to them. They thus, tend to depend more on locally available inputs than imported items. New building materials and construction techniques that are popularised in the formal sector are therefore bound to find their way into informal sector construction. This is even more so because some craftsmen undertake jobs in both sectors.

Machinery for Co-ordination of Construction Planning

The current practice in many countries with regard to preparation of construction projects and programmes is that various sector ministries include their proposals as part of their overall submission to the planning ministry as inputs into the national development plan or for the budget allocation exercise. The ministries of public works and housing in general take care of major building and civil works in the public sector. However, other ministries like health, education, industry and agriculture often have substantial construction projects which are submitted separately from those of the ministry of public works.

Thus, while in the national development plans the general policies of government for the construction sector may be clearly spelt out, the uncoordinated nature of construction projects planning often leads to implementation problems when it becomes clear that the available resources cannot cater effectively to all the projects. A large number of uncompleted projects dotted over the national geographical space does not indicate the best return for a country's scarce financial resources.

Governments in the region should therefore consider the creation of a mechanism where one does not already exist, for a co-ordinated and comprehensive analysis of construction project proposals from the different sector ministries to determine the implications in terms of resource requirements so that the overall technical and financial feasibility can be evaluated. A system of project prioritization based on a set of clearly defined criteria should be evolved to assist in the allocation of available funds to projects. The machinery will be responsible for ensuring effective monitoring of the implementation of projects in the public sector.

The co-ordinating machinery should also undertake periodic evaluation of the construction sector as a whole and advise government on policy measures that would enhance the sector's development to meet the goals of national social and economic development plans. The needs of the informal construction sector should also be addressed.

IMPLEMENTATION OF CONSTRUCTION PROGRAMMES

The success of implementation of construction projects cannot be taken for granted as is evidenced by the number of uncompleted, suspended and abandoned projects found in some countries of the region. The reasons for these may be many and varied but would include the following:

(a) invitation of more projects than can be supported by the economy, that is, over-programming,

(b) inconsistencies in release of funds for payment to contractors;

(c) shortage of construction plant and building materials;

(d) incompetence of contractors

(e) poor supervision,

(f) lack of effective project monitoring.

Overprogramming

This situation arises primarily because of the lack of a coordinated approach in the selection of projects for inclusion in the development plan. At the plan preparation stage, there should be a machinery for considering submissions from the various governmental institutions for housing and building projects, to determine an optimum number that can be realistically supported by the economy during the plan period. This should take account of the supply of construction inputs and the effects of inflationary pressures which affect the cost of the inputs. The unsure judicious use of resources, attention should be focussed on completion of on-going projects rather than the initiation of new ones whose chances of early completion may be doubtful.

Financing of Projects

Financing is one of the most critical factors that influence the successful and timely completion of projects. The payment of mobilization advance to contractors prior to commencement of projects is usual with international contracts. For fully locally funded contracts, however, contractors in many countries have to secure their own mobilization advances through the banking system with the attendant high interest rates. In situations of uncertainties regarding the regular supply of building materials, contractors have to commit large sums of money to maintain inventories of essential materials.

The contractor takes these measures in anticipation of prompt payment for work duly certified as completed. Delays in payments are however, common with the result that the contractor experiences serious cashflow problems which could sometimes lead to temporary abandonment of the project. The client also suffers the consequences of the delay in terms of increased project costs and postponed completion.

Another aspect of the problem of project financing is that funds may be allocated in one year for a project to commence, but because of reduced budgetary allocation to the implementing agency the following year, no funds are made available for payment of work done.

With a relatively smaller financial base, local contractors are more adversely affected by the failure of governments to effect prompt payments. Access to bank overdrafts cannot always be guaranteed. The foreign construction firms can call upon their international network of affiliates to overcome gaps in their financial resources. Even though in some countries there is a penalty clause which allows contractors to claim interest on overdue payments, local contractors may be unwilling to evoke the clause because of fears about the consequences in terms of future contract awards.

The lessons are clear. Projects must be completed early if they are to provide the anticipated services. To achieve this, sound financial planning must be undertaken. The following points should be kept in view:

(a) In view of relatively high rates of inflation experienced in countries of the region, timely completion of projects is desirable.

(b) Cash flow problems resulting from delayed payments do not only hamper the progress of project execution but limit the contractor's ability to apply sound management and site control methods necessary for building up his store of experience.

(c) On going projects should receive priority in the allocation of funds. The corollary to this is that care should be taken not to spread funds thinly over several projects at any given time.

Selection of Contractors

The right choice of contractors for specific projects on hand ranks high among the factors that affect successful project implementation. Procedures for the award of contracts may differ from country to country but basically two methods are used to obtain tenders for consideration, namely selective tendering or open tendering. In either case bids submitted by a group of "qualified" contractors are evaluated to determine the one most capable of executing the project at an acceptable price and within a reasonable time period. Variations may be found within each of these two methods.

In order to minimise abuses in the award of contracts, it is important to clearly define a code of procedure for tendering and to ensure adherence to the stipulated principles and conditions. The criteria for the classification of contractors should be strictly applied so that those considered for specific projects would indeed possess the minimum technical and managerial competence needed. Tender Boards should carefully evaluate capacities of contractors to undertake a number of projects concurrently, particularly at scattered locations within the country, to confirm their ability to maintain a high level of performance at all their project sites.

Availability of Construction Plant and Building Materials

Replacement of aged construction plant should be routinely carried out to achieve high plant productivity levels and enhance the technical performance of the contractor. This does not always occur especially in the countries where constraints are posed by limited foreign currency reserves. Frequent plant breakdowns are experienced and when spare parts are also not readily available because of lack of foreign exchange for their importation, then long stoppage periods should be expected.

In their eagerness to reduce delays and minimise idle labour on site, contractors may be forced to use plant inappropriately because they cannot lay hands on the plant which would be most cost-effective for the job on hand. It is usual that for international contracts, the contractor is able to bring in new plant and equipment, and the spare parts that would be needed for their maintenance during the life of the project. Since few local contractors win such contracts, the disparity between local and foreign construction firms is perpetuated. A logical question to pose at this point is, whether special foreign exchange allocations cannot be made by governments to assist local contractors to maintain their plants and equipment. In answering this question one can refer to attempts which have been made to address the issue. Plant pools have been set up in some countries to hire out plant to contractors. To be effective however, plant pools should be decentralised so that access to their services is not restricted.

As part of its fourth highway project being implemented with funding from the World Bank, the government of Ghana has implemented a programme of assistance to selected local contractors to acquire essential construction plant and equipment and upgrade their technical and managerial skills. Such direct forms of assistance are necessary if local capabilities are to be built up to eventually undertake complex jobs which are currently carried out by foreign companies.

The development of local capabilities for the fabrication of spare parts for construction plant, as well as simple tools and equipment used in the construction sector is another area of concern requiring the attention of African governments.

Building Materials

Inadequate supplies and high cost of building materials is a wellknown characteristic of the construction industry in Africa. Import dependence, in an era of diminished foreign exchange resources, poor performance of local production units and problems of long distribution distances on a poorly developed transportation network, among other factors, account for gaps in supplies which in some countries may be described as chronic.

In the face of uncertainties about supply of building materials, contractors are sometimes forced to purchase and stock essential materials as and when they become available. Such a practice does not only force the contractor to lock up much needed working capital, but can disrupt his financial planning.

In situations of chronic shortages of specific building materials, like cement and steel, measures should be taken to determine priorities in the allocation of what is available. Abuses in the allocation system should be checked to avoid diversion of materials to uses other than those specified by the allocation committee. Such a system should be used to favour contractors undertaking government projects since it will satisfy the interests of both parties.

Supervision of projects

In implementing a construction project the contractor invariably aims at minimizing his costs and maximizing his profits. From the point of view of the client, however, this objective should be achieved without sacrificing quality in the output produced. Compliance with agreed specifications, use of approved building materials and acceptable plant and construction techniques are all essential for the achievement of the desired quality of work.

The client may assume direct responsibility for project supervision or appoint consultants to act on its behalf. The supervisory team should be well qualified in all aspects of the project to ensure the contractor's compliance with the requirements of the contract. On the other hand, the consultants should also be able to provide guidance to the contractor in the construction process and techniques to safeguard the interests of the client in the achievement of achieving satisfactory output.

Foreign consulting firms are operating in countries of the region. Their involvements in project design and supervision should be linked to their joint participation with local firms so that local expertise can be built up in fields where this expertise is currently lacking.

Monitoring of Project Implementation

One needs to distinguish project supervision, which involves day to day control of site activities and other matters related to the physical execution of the project, and project monitoring. Project monitoring concerns the continuing appraisal of the performance of on-going projects to determine how schedules are being kept, to check whether quality standards are being maintained, and to identify bottlenecks to smooth project implementation so that remedial action can be taken. This requires that in addition to the

progress reports submitted by the consultants, periodic site visits are made by representatives of the implementing agency. Site visits provide opportunities for a better appreciation of implementation problems particularly those arising from building materials shortages and inadequate financing due to delays in the payment of contractors' certified claims.

An effective monitoring system will help the implementing agency to take early action on the continued engagement of contractors found to be grossly incapable of completing the project satisfactorily. It will also help in ensuring that the funds available for all agency projects are judiciously distributed to ensure optimum returns, particularly when the funds are not sufficient to meet all outstanding claims.

In the face of the current monetary problems and as part of measures for economic recovery, Governments have to take a hard look at on-going projects with a view to taking decision on those which may require scaling down or temporary suspension. The lesson to be learnt here is that decision making at the project planning stage should be based on sound criteria which fit into the government's overall economic development objectives and financial realities. Since in practice projects in the public sector may not be centralised under one implementing agency, but may be spread among sector ministries, it is important that the Ministry of Finance and Economic Planning set up the appropriate monitoring machinery to ensure optimum use of available financial resources.

Governments need to take action on building up a cadre of qualified and experienced professionals to undertake effective monitoring of projects in the public sector.

Policy Issues

The foregoing discussion has highlighted the need for deliberate action by governments to ensure the proper planning and implementation of construction projects so as to achieve optimum use of scarce local and foreign currency resources. Construction sector planning has to be integrated fully in national economic development plans. A continuous evaluation of the requirements of the sector will help to focus policy action on critical areas that need urgent attention.

(a) Governments should set up a co-ordinating machinery for the comprehensive planning and effective monitoring of construction projects. This machinery will also be the focal point of advise to government on formulation of policies that would promote the systematic growth of the sector so that it can more effectively meet the demand for services by other productive sectors of the national economy.

(b) Development of local construction capacities to be able to undertake an increasing share of the projects currently handled by foreign construction companies. Action should be taken to improve access to capital for purchasing plant and equipment and financing recurrent project expenditure; upgrading of technical expertise and managerial know-how.

(c) Improvement of the supply of building materials through the rational use of imported materials and increased local production. Improvement in capacity utilization of existing and encouragement of a decentralized system of production based on available resources and capable of meeting demands in different parts of the country are of paramount importance. The use of innovative materials and construction techniques should be promoted.

(d) Development of a cadre of qualified manpower of all categories to meet the needs of all segments of the construction sector including planning, supervision and monitoring of projects, and on-site project execution.

(e) Planning for the development of the informal construction sector which is an important contributor to total construction output.